



Main Street
East Hartford, Connecticut 06108

RCRA RECORDS CENTER
FACILITY Pratt & Whitney - Main St
I.D. NO. CTD 990672081
FILE LOC. R-113
OTHER RDMS # 2846

MAY 13 1988

May 2, 1988

Mr. George Dews
Senior Sanitary Engineer
Hazardous Waste Management Section
Department of Environmental Protection
165 Capitol Avenue
Hartford, CT 06106

Merrill S. Hohman, Director
Waste Management Division
US EPA
JFK Federal Building
Room 1903
Boston, MA 02203

SUBJECT: Revised Incinerator Closure Plan
Pratt & Whitney East Hartford
EPA ID # CTD 990672081

Dear Sirs:

Attached is the revised closure plan for the hazardous waste incinerator at the East Hartford Main Street Facility. This revision to our January 16, 1987 submittal includes our response to the comments prepared by your office. We received these comments in a joint letter from EPA Region I and the Connecticut Department of Environmental Protection on February 2, 1988.

We would like to begin closure operations as soon as approval is obtained, and would once again appreciate a timely review. Contact John Murray at (203) 565-2016 with any questions or comments.

Sincerely,

John G. Whitehead
Plant Manager

JGW/JLM/ljs

Attachment

j-j6n

cc: A. C. Caldwell
R. A. Argazzi

CLOSURE PLAN
FOR THE BURN-ZOL
HAZARDOUS WASTE INCINERATOR

RESOURCE CONSERVATION AND RECOVERY ACT
CONCENTRATED WASTE TREATMENT PLANT

PRATT & WHITNEY
400 MAIN STREET FACILITY
EAST HARTFORD, CONNECTICUT
EPA ID # CT D 990672081

May 2, 1988

TABLE OF CONTENTS

| <u>SECTIONS</u> | <u>PAGE NO.</u> |
|---|-----------------|
| 1.0 INTRODUCTION | 1 |
| 2.0 FACILITY DESCRIPTION | 2 |
| 3.0 INCINERATOR DESCRIPTION | 2 |
| 4.0 PERMITTING HISTORY | 4 |
| 5.0 TEST BURN HISTORY | 4 |
| 6.0 CLOSURE PROCEDURES AND SCHEDULE | 5 |
| 7.0 MAXIMUM WASTE INVENTORY | 8 |
| 8.0 COST ESTIMATE AND UPDATES | 8 |
| 9.0 SAMPLING PROCEDURES | 11 |
| 10.0 TESTING AND DETERMINATION PROCEDURES | 11 |
| 11.0 CLOSURE CERTIFICATION STATEMENT | 12 |

APPENDIX

- A. Diagram on Burn-Zol Incinerator Train
- B. Hazardous Waste Analytical Data
 - Wax/Solvents
 - Cyanide Solution

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

1.0 INTRODUCTION

This closure plan is for the hazardous waste incinerator located at the Concentrated Waste Treatment Plant of the Pratt & Whitney East Hartford Main Street Facility, EPA ID No. CT D 990672081. Closure of this unit will be conducted in accordance with all applicable RCRA regulations, and will:

- 1) Minimize the need for further maintenance, and;
- 2) Control, minimize or eliminate to the extent necessary, the post closure release of hazardous wastes to groundwater, surface water or the atmosphere.

In subsequent sections, this closure plan provides a description of general methods to be applied and precautions to be taken in closing the incinerator. A trackable closure schedule and the specific closure methods will be described in detail, as will the closure cost estimate.

The following general information applies to this plan:

1) Personal Health and Safety- The decontamination crew will consist of a minimum of two individuals at all times who will be adequately clothed, including self-contained breathing apparatus, if required, and coveralls. Supervision of the decontamination process will include the individual(s) responsible for operation of the Concentrated Waste Treatment Plant and members of the Pratt & Whitney Environmental Protection Group.

2) Sudden or Non-Sudden Release, or Fire Hazard- The decontamination process will be considered as an activity presenting a moderate risk potential for release of hazardous waste and low fire/explosion hazard. As such, the appropriate mechanisms of the contingency plan will be readily available for activation.

This plan is the third revision to the closure plan submitted to the DEP originally on January 6, 1986. The first revision, submitted July 16, 1986 to EPA and DEP, contained additional information and changes which were required by the DEP in a February 24, 1986 letter, and in subsequent meeting and site visits with the DEP on closure of this incinerator. The second revision addressed the comments prepared and submitted by the EPA/DEP in a joint letters to Pratt & Whitney on December 23, 1986. This third revision substantially changes the previous approach to closure of the incinerator train and addresses all comments made and concerns raised in a joint letter from EPA/DEP to Pratt & Whitney dated January 29, 1988.

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

2.0 FACILITY DESCRIPTION

The Concentrated Waste Treatment Plant is the hazardous waste facility at the Pratt & Whitney East Hartford Main Street plant. Hazardous wastes are brought to the Concentrated Waste Treatment Plant from areas within this manufacturing facility and from other Pratt & Whitney plants located within Connecticut, Maine and New York.

As specified on the RCRA Part A application, the Concentrated Waste Treatment Plant consists of a hazardous waste barrel storage, transporter storage, tank storage, and a liquid injection hazardous waste incinerator. All portions of the facility surrounding the incinerator are paved.

The incinerator has never met Connecticut Department of Environmental Protection particulate emissions performance criteria, and outside of the allowed test burns to determine operating parameters and compliance with Connecticut regulatory standards, this unit has never been used to treat any hazardous wastes. Only the incinerator portion of the Concentrated Waste Treatment Plant will undergo closure as described in this plan.

3.0 INCINERATOR DESCRIPTION

A diagram of the incinerator and associated equipment is presented in Appendix A. Below is a narrative description of this equipment, the sum total of which shall be referred to in later sections as the incinerator train.

The incinerator located at the Concentrated Waste Treatment Plant is a Burn-Zol Model 272 liquid injection waste incinerator. Physically the incinerator is cylindrical in shape, being 6'6" outside diameter by 21'3" high with 3" of forced air cooling between the outer stainless steel shell and the steel inner shell. There is then a minimum of 6" of high temperature acid resistant refractory lining. The primary and secondary combustion chambers and the tertiary holding chamber are 5' in diameter or 19.5 square feet in area.

The primary chamber has two (2) dual fuel Maxon 3" Multifire II burners rated at 1.5 Million British Thermal Units per hour (MM BTU/hr) each. These burners use either natural gas or No. 2 fuel

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

oil. There are also three (3) nozzles in this chamber for injection of wastes. Each nozzle is air cooled and is accessible from the outside for interchanging nozzles for proper atomization of waste charges.

The secondary chamber has one (1) dual fuel Maxon 4" Multifire II burner rated at 2.5 MM BTU/hour. All burners have Protectifier flame safeties on the pilots and 20:1 throttleable and proportional control.

The incinerator combustion units are directly outside and adjacent to the building containing the remainder of the incinerator train. Also inside this building are other Concentrated Waste Treatment Plant operations which will remain active after closure of the incinerator.

Combustion products from the incinerator are ducted to an Eclipse Model 3 HRW waste heat boiler which generates hot water. A pitot tube with indicator is in the duct before this blower to indicate combustion gas velocity. Generated hot water is cooled in a B&G tube and shell heat exchanger with the cooling water being discharged to a NPDES permitted cooling water discharge. This water was intended for eventually heating the building.

From the boiler, combustion products are then ducted to a Hydronics Model VS 72 venturi scrubber and a Hydronics Model PTS 72 packed tower counterflow scrubber operating with caustic wash. Both scrubbers are fabricated of stainless steel and the tower contains polypropylene Tellerette packing. To protect the packing there is a thermocouple and temperature switch in the inlet duct that will shut down the incinerator before the packing has any thermal damage. There is also a liquid manometer across the venturi to indicate pressure drop. The pressure drop is used as an indication of air velocity and venturi scrubber efficiency. The venturi scrubber is designed for particulate removal while the packed tower has high gas/liquid area for removing fine particulate and neutralizing acids in the waste gas stream. At the exit of the scrubbers is a demister system to remove liquid entrainment in the waste gas stream. The caustic wash is contained in a 400 gallon tank and circulated through the scrubbers at 65 gallons per minute (GPM). The pH is controlled at 7.0-8.5 by the addition of liquid sodium hydroxide.

The air from the demisters is ducted through a damper system to one of two prime air movers. These are New York Blower Series 45 G1 fans, size 264 with 60 horse-power (HP) motors rated at 4000 cubic feet per minute (cfm) at 37" water. One blower is the prime mover with the second used as a back-up. The exhaust from the blower is directed out the exhaust stack on top of the building.

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

the system is an induced draft system, indicating the entire system operated under negative pressure conditions. As such, air could only be pulled into the ducts, as opposed to emissions occurring from the ductwork to the outside. Therefore, all emissions from the unit would be ducted and discharged through the exhaust stack.

4.0 PERMITTING HISTORY

On September 19, 1979 Pratt & Whitney submitted an application to the Connecticut Department of Environmental Protection (DEP) Air Compliance unit to construct a liquid injection hazardous waste incinerator. The permit to construct was granted on August 9, 1980. Construction commenced immediately. The construction was essentially complete in April 1981. Since that time test burns were conducted at various times to define the performance of the unit compared to the Connecticut Department of Environmental Protection regulatory standards. As described in the section below, these performance tests indicated excessive particulate emissions, and the required Construction and Operation permits from the DEP Air Compliance Unit expired while these problems were investigated. Renewals of these permits have been requested and received from the DEP on numerous occasions, as each performance test defined additional construction and testing work necessary to attempt in bringing the incinerator into regulatory compliance.

The incinerator was included in the Part B Permit Application submitted to the DEP originally in April of 1983. The subsequent revisions to this application included updated information on the incinerator and proposed trial burn plan. The DEP issued Pratt & Whitney the most recent Notice of Deficiency (NOD) on this permit application in October, 1985. Included in this NOD were requests for additional incinerator information. As a response, Pratt & Whitney decided to close the incinerator and remove it from the Part B Permit Application process.

5.0 TEST BURN HISTORY

Three sets of test burns have been conducted on the unit. The first such burn was conducted March 30 and 31, 1982. These tests included approximately seven hours of burning, split between cyanide solutions and wax/solvent mixture. These test burns indicated excessive particulate and combustion problems.

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

To attempt in correcting the problems noted during this initial test burn, new injection nozzles were installed to increase atomization of the wastes, new burner controls were installed, and the exhaust stack was insulated to reduce the exterior fan noise.

A second test burn was conducted December 12-13, 1983 to determine the particulate emissions rate when burning these same two waste streams. This test consisted of approximately seven hours of burning, again split between these two waste streams. The test results indicated particulates again exceeding state requirements. As a result of this test, a second demister was installed.

The most recent and final test burn was conducted May 30, 1984 using only the wax/solvent mixture. This test further indicated excessive particulate emissions and poor destruction efficiencies on the wax portion of the wax/solvent mixture, even after all the above modifications had been completed. Pratt & Whitney's consultant on the project, Recon Associates, analyzed the results of this test and all previous test data and proposed a series of much more extensive modifications which they felt could possibly bring the unit into regulatory compliance. After review of Recon's report, the decision was made to close the incinerator in accordance with all applicable regulations.

Four (4) different waste types had originally been proposed for treatment; blend oil, Zyglo solution, cyanides, and wax/solvents. Only the cyanides and wax/solvents are hazardous wastes. Each of the wastes were to be injected into the incinerator from a separate nozzle except the Zyglo and cyanides which were to be from a common nozzle. However as indicated above, only the cyanide and wax/solvent solutions have been burned, and this occurring only during the allowed test burns. Analytical data on the cyanide and wax/solvent mixtures are presented in Appendix A.

6.0 CLOSURE PROCEDURES AND SCHEDULE

Only the incinerator portion of the Concentrated Waste Treatment Plant will be undergoing closure activities. The structure, housing the waste heat boiler and the pollution control equipment, will remain intact for future use. Revisions to the Part B Permit Application will be submitted when plans for the new uses and appropriate closure measures for them are finalized.

At closure, all hazardous wastes and hazardous waste residues (including ash) will be removed from the incinerator, waste heat boiler, and associated air pollution control equipment.

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

As has been previously mentioned, the incinerator has never been operational except for the allowed test burns, and will not become operational during the closure. Therefore there will not be any final treatment steps in the closure procedures described below. For the same reason, there will be no description of the operating conditions and operating procedures.

There are no storage tanks or storage structures at the Concentrated Waste Treatment Plant dedicated to holding wastes for the incinerator, and therefore there will also be no need to discuss the maximum closure waste inventory or storage inventory.

The closure process concerns only the incinerator, waste heat boiler, and associated air pollution control equipment, and the disposal of any hazardous wastes or hazardous waste residues. The following procedures will describe this work.

1. Remove any ash from the incinerator (if present), residue from the waste heat boiler, and Tellerette packing from the pollution control equipment and treat as a hazardous waste. The residue or ash, if present, will be wetted for dust control, and will be removed by shovel or other such appropriate and similar tool.
2. The waste feed lines and injection nozzles will be flushed from the pumps located in the basement of the drum storage building to the incinerator using an appropriate solvent. Ordinary process water will first be used to flush the cyanide line, followed by a dilute sodium hydroxide flush. Rinsate from these two flushes shall be considered hazardous wastes and will be treated, stored, and disposed of accordingly. This line will then be flushed again using ordinary process water. This flush will be collected and tested to determine if it is a hazardous waste following the procedures and parameters detailed in Sections 9.0 and 10.0. If found to be hazardous, the three step flushing procedure will be repeated until the process water flush is determined to be non-hazardous. The lines will then be cut off at ground level, sealed and abandoned in place.

The waste oil and solvent line will be flushed using virgin jet fuel. All rinsate from the flushing of these lines will be treated as hazardous wastes and will be treated, stored, and disposed of accordingly. Following this flush, these lines will be flushed using an appropriate bio-degradable degreaser and surfactant which will be collected and tested to determine if it is a hazardous waste following the procedures and parameters listed in Sections 9.0 and 10.0. If found to be

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

hazardous, this two step flushing procedure will be repeated until the surfactant rinsate is determined to be non-hazardous. When this condition is achieved, the lines will be flushed until clear with process water. Finally, the lines cut off at ground level, sealed and abandoned in place.

3. Disassemble the incinerator, waste heat boiler, and pollution control equipment to manageable size pieces, place in a polyethylene lined dump trailer, manifest and transport to a fully permitted landfill for disposal. The refractory will remain intact and in place during this operation.
4. Shotblast the concrete pad formerly used as the footing for the incinerator and steam clean the pit located within the building that formerly contained the pollution control equipment for the incinerator. All residue from these operations will be collected, barrelled in D.O.T specification drums and treated as a hazardous waste.
5. Complete Certification of Closure as shown in Section 11.0.
6. Within 120 days of Certification of Closure as specified in Section 11.0, submit revisions to the Part B Application for the Main Street facility to reflect the planned uses for and the eventual closure of the remaining structure.

Table 1 presents the estimated timetable to complete all required closure activities described in this section. All dates are relative to public notice being completed and approval of the closure plan occurring at Month 0.

TABLE 1

TRACKABLE CLOSURE TIMETABLE

| | <u>Estimated Time To Complete Steps</u> | <u>Total Time</u> |
|---------------|---|-------------------|
| Step 1 to 4 | 1.5 Months | 1.5 Months |
| Certification | 0.5 Months | 2.0 Months |
| Step 6 | 4.0 Months | 6.0 Months |

The actual time required to perform the closure activities may be completed ahead of this timetable. Pratt & Whitney would like to begin the closure immediately upon receiving final approval from the EPA/DEP.

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

7.0 MAXIMUM WASTE INVENTORY

As previously mentioned, the unit never operated besides the three short test burn periods. Therefore little, if any, waste inventory ever existed or exist today, as specified below;

1. Incinerator ash - The wastes burned were not high in ash content or burned in sufficient quantities to produce any visible quantities of ash. This has been verified by visual inspection of the unit. In addition, initial combustion of the wastes occurred in the primary chamber, and any ash would be present in this chamber. We intend to remove and dispose of all materials and refractory from the primary chamber as hazardous waste. Therefore any ash which was generated will be handled appropriately.
2. Scrubber Waters - All scrubber waters were kept in the pH range of 7.0 to 8.5 as indicated previously. The test burn durations were not sufficient to produce waters which were hazardous wastes. After each test burn, all scrubber waters were tested for cyanide, chromium and pH, and discharged into the NPDES permitted wastewater treatment system. As the unit is not operational, there is no inventory of scrubber waters to consider in the closure plan.
3. Scrubber sludges - The test burn durations were not sufficient to produce any scrubber sludges. As the unit is not operational, there is no inventory of scrubber sludge to consider in the closure plan. In addition, no sludges were generated from any other portion of the incinerator train during the very limited test burns, and therefore no inventory is included.

8.0 CLOSURE COST ESTIMATE AND UPDATES

Closure costs for 1980 were calculated in Fall 1980 dollars and inflated for the period 1981 through 1987. These costs are based upon 1) third party contractor labor @ \$200/Man Day, 2) transport and treatment of 55 gallon drums @ \$100/each, and 3) analytical costs of \$200/sample. All other costs are based upon "Means 1980 Cost Data." The third party labor rate is based upon consideration of cleanup contractor rates available as of 1986 in the local area. Present labor rates are approximately \$30.00 per hour, which would be \$24.00 per hour in 1980 dollars.

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

The closure plan procedure used in previous submissions followed the steps below with the associated costing:

Step 1 Removal and Disposal of Ash and Residue

| | |
|-----------------------|-----------------|
| A. Testing-10 samples | \$ 2,000 |
| B. Labor | \$ 1,000 |
| C. Disposal-10 drums | <u>\$ 1,000</u> |
| Sub-Total | \$ \$4,000 |

Step 2 Refractory Sampling and Removal

| | |
|---|-----------------|
| A. Take samples-labor | \$ 200 |
| B. Testing-9 composites | \$ 1,800 |
| C. Remove refractory-labor 2 men, 5 days | \$ 2,000 |
| D. Disposal-Primary Chamber 10 drums | <u>\$ 1,000</u> |
| Sub-Total | = \$5,000 |

Step 3 Flush Waste Feed Lines

| | |
|--------------------------|---------------|
| A. Labor-2 men, 2 days | \$ 800 |
| B. Flush Fluids | \$ 100 |
| C. Testing-3 samples | \$ 600 |
| D. Disposal-3 drums | \$ 300 |
| E. Equipment-pumps, etc. | <u>\$ 200</u> |
| Sub-Total | = \$2,000 |

Step 4 Rinsing Procedures- Main Unit

| | |
|--------------------------------|-----------------|
| A. Testing-10 samples | \$ 2,000 |
| B. Labor- 5 men, 3 days | \$ 3,000 |
| C. Disposal-10 drums | \$ 1,000 |
| D. Equipment-pumps, steam, etc | <u>\$ 2,000</u> |
| Sub-Total | = \$8,000 |

Step 5 Rinsing Remaining Equipment

| | |
|-----------------------|-----------------|
| A. Testing-10 Samples | \$ 2,000 |
| B. Labor | <u>\$ 2,000</u> |
| Sub-Total | = \$4,000 |

Step 6 "Wipe" Sampling and Certification

| | |
|------------------------|---------------|
| A. Take Samples-labor | \$ 200 |
| B. Testing- 14 samples | \$ 2,400 |
| C. Certification | <u>\$ 600</u> |
| Sub-Total | = \$3,200 |

Sum of Closure Costs \$26,200

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

| | |
|--------------------|-----------------|
| Contingency @20% | \$ <u>5,240</u> |
| Total Closure Cost | \$31,440 |

Round Value to \$32,000

As required by the RCRA regulations, presented in Table 2 are the closure cost updates and the inflation factors used to bring the \$32,000 closure cost to Year 1987 dollars.

TABLE 2
CLOSURE COST UPDATES

| <u>YEAR</u> | <u>INFLATION FACTOR</u> | <u>UPDATED COST</u> |
|-------------|-------------------------|---------------------|
| MAY 1981 | - | \$32,000 |
| May 1982 | 1.09 | \$34,880 |
| May 1983 | 1.06 | \$36,973 |
| May 1984 | 1.04 | \$38,452 |
| May 1985 | 1.04 | \$39,990 |
| Year 1986 | 1.03 | \$41,190 |
| Year 1987 | 1.03 | \$42,430 |

For this submission, the completely revised methodology described in Section 6 has costing associated with it in 1988 dollars and would be expended as described below:

| | |
|--|-----------|
| Step 1. Remove and Dispose of Residue, Ash and Packing | |
| Remove Ash and Residue (Labor) | \$ 2,500 |
| Remove Tellerette Packing (Labor) | \$ 1,500 |
| Dispose of Material | \$ 1,000 |
| Step 2. Flush Waste Feed Lines | |
| Labor | \$ 4,000 |
| Step 3. Disassemble Incinerator Train | |
| Labor | \$ 32,600 |
| Transportation | \$ 22,400 |
| Disposal | \$ 16,300 |
| Step 4. Site Clean-up | |
| Shotblast Pad (Labor) | \$ 4,000 |
| Steam Clean Pit (Labor) | \$ 2,200 |
| Step 5. Certification and Contractor Costs | |
| Contractor Mobilization | \$ 9,600 |
| Contractor Demobilization | \$ 9,600 |

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

Certification by Independent P.E. \$ 2,000

Grand Total \$107,400

Round to \$108,000

9.0 SAMPLING PROCEDURES

Each drum of wastes, residue, or rinse water will be sampled and analyzed separately. Samples will be taken from the drums using a Coliwasa or glass "thief" sample tube. These sampling devices allow a composite sample to be taken covering all depths of the material. All glass sample tubes will be new, and will be discarded immediately after use. The Coliwasa, if used, will be cleaned after each use with detergent, distilled water rinse, hexane rinse, and distilled water rinse in that order.

Quality control of the samples will be maintained by:

1. Sampling with the appropriate instrument.
2. Use of the appropriate sample container and preservation techniques for the parameters of interest as described in EPA publication SW-846, Test Methods for Evaluation of Solid Waste, Physical/Chemical Methods, 1982, and as time to time amended.
3. Only persons instructed in using a particular sampling device shall take the sample.

10.0 TESTING AND DETERMINATION PROCEDURES

All wastes, residues, and rinse waters will be analyzed for the parameters in Table 3 using the extraction and test methods as found in EPA publication SW-846 and presented in this table. This list includes all the parameters which could be expected to be present in the cyanides and wax/solvents, the only hazardous wastes to have been burned, in addition to the hazardous waste characteristics of corrosivity, ignitability, reactivity, and Extraction Procedure toxicity.

The levels in this table for characteristic hazardous wastes are taken directly from the Federal hazardous waste criteria as found in 40 CFR Section 261. The criteria for listing a waste as F001 and F006 as specified in 40 CFR 261 Appendix VII will also be analyzed for as these may be expected due to the wastes that were incinerated during the trial burns.

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

Wastes and rinsate found to have concentrations above these levels will be considered hazardous wastes, and disposed of accordingly.

TABLE 3

ANALYTICAL METHODS AND HAZARDOUS WASTE LEVELS

| <u>PARAMETER</u> | <u>EXTRACTION METHOD</u> | <u>ANALYTICAL METHOD</u> | <u>HAZARDOUS LEVELS</u> |
|---------------------|-----------------------------|--------------------------|-------------------------|
| Arsenic | 6010 | 7060 or 7061 | >5.0 |
| Barium | 6010 | 7080 or 7081 | >100.0 |
| Cadmium | 6010 | 7090 or 7091 | >1.0 |
| Chromium- Total | 6010 | 7190 or 7191 | >5.0 |
| Chromium | 6010 | 7195 or 7196 or | >5.0 |
| -Hexavalent | | 7197 or 7198 | >5.0 |
| Lead | 6010 | 7420 or 7421 | >5.0 |
| Mercury | 6010 | 7470 or 7471 | >0.2 |
| Selenium | 6010 | 7740 or 7741 | >1.0 |
| Silver | 6010 | 7760 or 7761 | >5.0 |
| Cyanide | N/A | 9010 | N.D.* |
| pH (standard units) | N/A | 9040 | ≤2.0 or ≥12.5 |
| Flash Point (° C) | N/A | 1010 or 1020 | <60° C |
| F001 Solvents | 5030 or Direct Injection | 8010 | N.D. |

* N.D. - Below detectable limits

All the above levels are in mg/l unless noted.

Quality control of the analysis will be maintained by:

1. Using the appropriate analytical methods as described in SW-846.
2. Using only State of Connecticut Certified Laboratories for the analysis. The State of Connecticut has its own strict quality control procedures which laboratories must meet before certification is given.

11.0 CERTIFICATION OF CLOSURE

The certification statement presented below will be submitted to the EPA Regional Administrator and the DEP upon completion of closure. The appropriate documentation supporting the engineer's portion of the certification will be furnished to the permitting authorities upon request until Pratt & Whitney has been released from the financial assurance requirements of 40 CFR 265.143 (h).

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

CERTIFICATION OF CLOSURE

"I, _____, for Pratt & Whitney Group, United
(Name)

Technologies Corporation, owner and operator of the hazardous waste
incinerator at 400 Main Street East Hartford, and
I, _____, P.E., employed

(Name)

by _____, certify by means of our
(Firm)

signatures, that the incinerator named above has been closed in
accordance with the method specified by the closure plan
dated _____, and attached hereto. Closure was completed
on _____.

(Date)

Pratt & Whitney Group

P.E.

Title

Firm

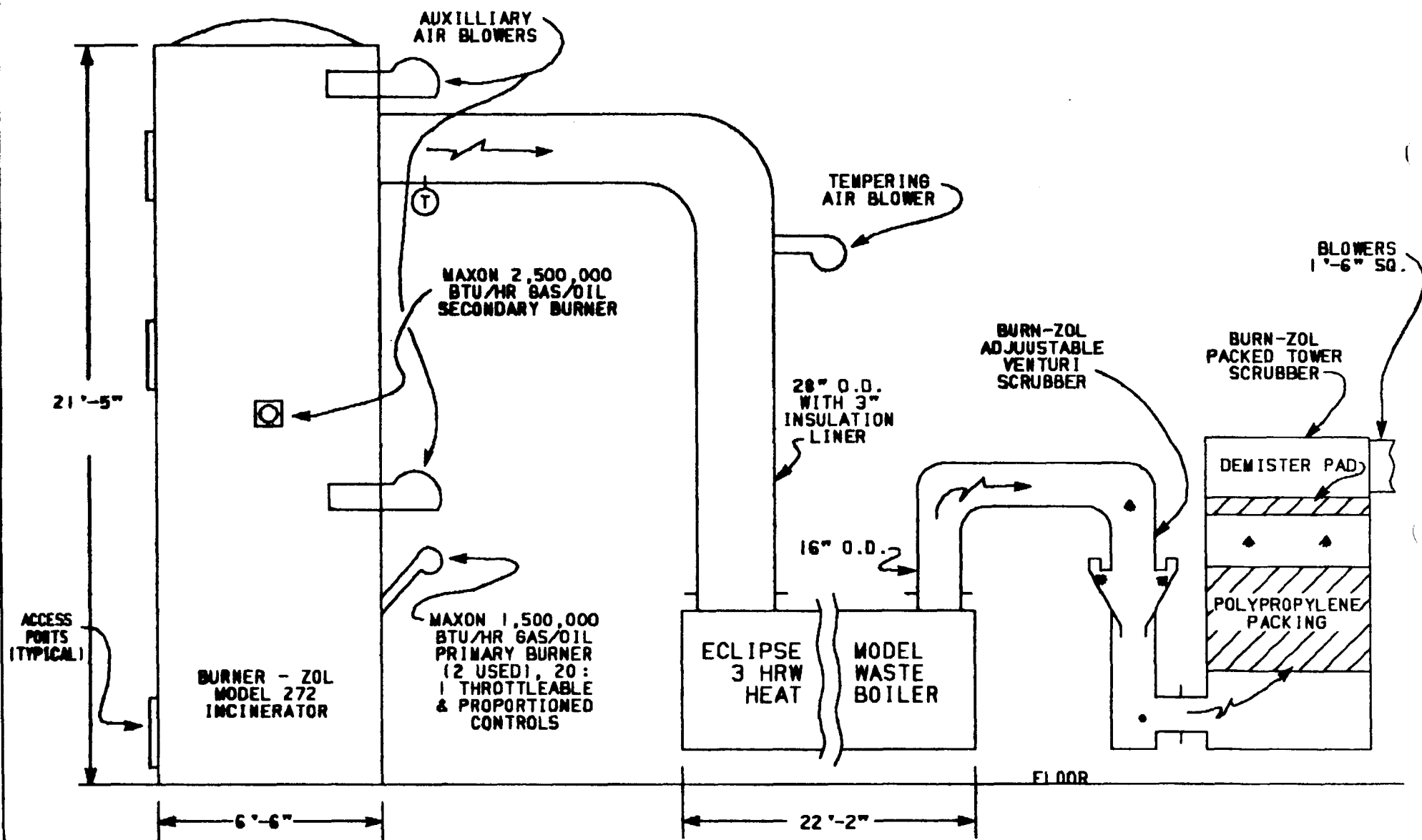
Date

Date

APPENDIX A
DIAGRAM OF INCINERATOR TRAIN

HAZARDOUS WASTE INCINERATION SYSTEM

INSTALLED AT
PRATT & WHITNEY, EAST HARTFORD, CONN.



NOTE: A 1,200 ACFM COMBUSTION AIR BLOWER FEEDS THE 3 INCINERATOR BURNERS

APPENDIX B

HAZARDOUS WASTE ANALYTICAL DATA

Wax/solvents
Cyanide Solution

THE MINGES

ENVIRONMENTAL LABORATORY

Lawton S. Averill, Laboratory Director

A division of The Minges Associates, Inc.
11 Avon Park North, P.O. Box 657, Avon, CT 06001
203-677-8300

Catherine M. Pintavalle, Chemist
Tara L. Vander Els, Chemist

December 19, 1983

Pratt & Whitney Aircraft
Maintenance Building
Mail Stop 122-12
East Hartford, CT 06108

Att: William Chudzik

Re: Analysis of "Cyanide" Sample
and "Solvent" Sample

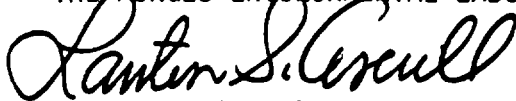
Dear Mr. Chudzik:

Enclosed are results on the cyanide sample #112-55-64, Newlands No. 351 L3
and solvent sample #112-55-62, Newlands No. 387 J3. I hope the results are
sufficient at this time.

If further analysis is needed on the wax solvent mixture, another sample
is needed.

Very truly yours,

THE MINGES ENVIRONMENTAL LABORATORY



Lawton S. Averill

LSA:lj
Encl.

THE MINGES

ENVIRONMENTAL LABORATORY

Lawton S. Averill, Laboratory Director

A division of The Minges Associates, Inc.
11 Avon Park North, P.O. Box 657, Avon, CT 06001
203-677-8309

Catherine M. Pintavalle, Chemist
Tara L. Vander Els, Chemist

REPORT ON LABORATORY EXAMINATIONS

To Client: Pratt & Whitney Aircraft
Maintenance Bldg. - Mail Stop 122-12
East Hartford, CT 06108

Date: November 15, 1983

SAMPLE DATA: Att: W. Chudzik


Collected By: Pratt & Whitney Aircraft

| SAMPLE NO. | DESCRIPTION OF SAMPLE |
|------------|---|
| 112-55-64 | Sample labeled "Cyanide" and received October 7, 1983 |

LABORATORY FINDINGS:

(milligrams per liter, mg/l, except as noted)

| ANALYSIS FOR | SAMPLE NO. | | | | |
|-----------------|------------|--|--|--|--|
| | 112-55-64 | | | | |
| Cyanide Total | 21,300 | | | | |
| Metals | | | | | |
| Aluminum | 51 | | | | |
| Cadmium | 6020 | | | | |
| Chromium, Total | 4.3 | | | | |
| Copper | 940 | | | | |
| Nickel | 286 | | | | |
| Zinc | 11 | | | | |
| Oil and Grease | 48 | | | | |


The Minges Environmental Laboratory

COPY

THE NEWLANDS SANITARY LABORATORY

Sanitary, Chemical and Bacteriological Investigations

24 TOBEY ROAD
BLOOMFIELD, CONN. 06002
TEL. (203) 242-6291

December 19, 1983

Minges Associates, Inc.
16 Avon Park North
Avon, Conn. 06001

Attn: Mr. Lawton Averill

Gentlemen:

We have the following to report on the sample submitted to this laboratory on October 7, 1983.

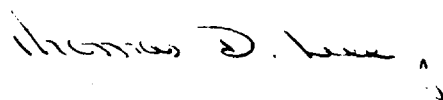
| | |
|-----------------------------|------------------------------------|
| Sample No. | 38733 |
| Mark | Solid/liquid sample 112-55-62 |
| <u>Infrared</u> | |
| Solid | parrafin wax |
| Liquid | Water 85% Perchloroethylene 15% |
| <u>Total Organic Carbon</u> | |
| Solid | 64.8% |
| Liquid | 2.21% |

Visual Examination

This material is approximately 20% liquid and 80% solid.

Very truly yours,

THE NEWLANDS SANITARY LABORATORY



Thomas D. Lee
Laboratory Director

TDL/cas

COPY

THE NEWLANDS SANITARY LABORATORY

Sanitary, Chemical and Bacteriological Investigations

24 TOBEY ROAD
BLOOMFIELD, CONN. 06002
TEL. (203) 242-6291

December 19, 1983

Minges Associates, Inc.
16 Avon Park North
Avon, Conn. 06001

Attn: Mr. Lawton Averill

Gentlemen:

We have the following to report on the sample submitted to this laboratory on December 8, 1983.

| | |
|-----------------------------|--|
| Sample No. | 351L3 |
| Mark | Liquid sample 2% Cyanide 112-55-64 |
| <u>PURGEABLE ORGANICS:</u> | |
| Methylene Chloride | less than 100 ppb |
| 1,1 Dichloroethylene | less than 100 ppb |
| 1,1 Dichloroethane | less than 100 ppb |
| t-1,2 Dichloroethylene | less than 100 ppb |
| Chloroform | less than 100 ppb |
| 1,2 Dichloroethane | less than 100 ppb |
| Bromodichloromethane | less than 100 ppb |
| 1,1,1 Trichloroethane | less than 100 ppb |
| Carbon Tetrachloride | less than 100 ppb |
| 1,1,2 Trichloroethylene | less than 100 ppb |
| Chlorodibromomethane | less than 100 ppb |
| Bromoform | less than 100 ppb |
| 1,1,2,2 Tetrachloroethylene | less than 100 ppb |

Very truly yours,

THE NEWLANDS SANITARY LABORATORY

Thomas D. Lee
Thomas D. Lee
Laboratory Director

TDL/cas

COPY

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TEL. (203) 242-6291

December 19, 1983

Minges Associates, Inc.
16 Avon Park North
Avon, Conn. 06001

Attn: Mr. Lawton Averill

Gentlemen:

We have the following to report on the sample submitted to this laboratory on December 8, 1983.

| | |
|-----------------------------|--|
| Sample No. | 351L3 |
| Mark | Liquid sample 2% Cyanide 112-55-64 |
| Total Organic Halides (TOX) | less than 10 ppb |
| Total Organic Carbon (TOC) | 38.82 gms/Liter |

Very truly yours,

THE NEWLANDS SANITARY LABORATORY

Thomas D. Lee

Thomas D. Lee
Laboratory Director

TDL/cas

THE MINGES

ENVIRONMENTAL LABORATORY

Lawton S. Averill, Laboratory Director

A division of The Minges Associates, Inc.
11 Avon, Park North, P.O. Box 657, Avon, CT 06001
203-677-8309

Laurie L. Zieminski, Chemist

October 15, 1981

Pratt & Whitney Aircraft
Maintenance Building
East Hartford, CT 06108

Att: Linda Satzuk

Dear Linda:

Enclosed are the metal results you requested on the wax solvent mixture submitted September 11, 1981.

My understanding is that this completes the required analysis on this sample.

Also enclosed is the purgeable organics test on Zyglo Sample No. 500-8876, Newlands Lab No. 911076.

Very truly yours,

THE MINGES ENVIRONMENTAL LABORATORY



Lawton S. Averill

LSA:lj
Encl.

THE MINGES ENVIRONMENTAL LABORATORY

A division of The Minges Associates, Inc.
11 Avon Park North, P.O. Box 657, Avon, CT 06001
203-677-8309

Lawton S. Averill, Laboratory Director

Catherine M. Pintavalle, Chemist
Tara L. Vander Els, Chemist

REPORT ON LABORATORY EXAMINATIONS

To Client: Pratt & Whitney Aircraft
Maintenance Building
East Hartford, CT 06108

Date: October 5, 1981

SAMPLE DATA: Att: Linda Satzuk Collected By: Pratt & Whitney Aircraft

| SAMPLE NO. | DESCRIPTION OF SAMPLE |
|------------|-----------------------------|
| 500-8630 | Zyglo wastewater, 8-5-81. |
| 500-8876 | Zyglo wastewater, 9-21-81. |
| 500-8875 | Sample for nickel analysis. |

LABORATORY FINDINGS:

(milligrams per liter, mg/l, except as noted)

| ANALYSIS FOR | SAMPLE NO. | | | | |
|-----------------|------------|----------|--|----------|--|
| | 500-8630 | 500-8876 | | 500-8875 | |
| BOD, 5 day | 300,000 | 670 | | | |
| Oil & Grease | 172,000 | 764 | | | |
| pH | 3.5 | 7.3 | | | |
| Aluminum | 6.3 | 0.00 | | | |
| Cadmium | 0.31 | 0.02 | | | |
| Chromium, Total | 2.4 | 0.02 | | | |
| Copper | 3.2 | 0.04 | | | |
| Iron | 89 | 0.48 | | | |
| Nickel | 2.2 | 0.04 | | 74,000 | |
| Zinc | 14 | 0.07 | | | |
| Solids | | | | | |
| Total | 15.7% | 1772 | | | |
| Volatile | 92.9 % | 1640 | | | |
| of tot.solids | | | | | |
| Suspended | 257 | 32 | | | |


The Minges Environmental Laboratory

THE MINGES

ENVIRONMENTAL LABORATORY

Lawton S. Averill, Laboratory Director

A Division of The Minges Associates, Inc.
11 Avon Park North, P.O. Box 657, Avon, CT 06001
203-677-8309

Laurie L. Zieminski, Chemist

October 5, 1981

Pratt & Whitney Aircraft
Maintenance Building
East Hartford, CT 06108

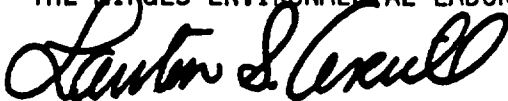
Att: Linda Satzuk

Dear Linda:

Enclosed are the results that I have at this time on the zyglo,
nickel and wax sample. As I receive more information, I will
pass it on to you.

Very truly yours,

THE MINGES ENVIRONMENTAL LABORATORY



Lawton S. Averill

LSA:lj
Encl.

RICHARD LOMBARDI, P.E.
PRESIDENT
THOMAS D. LEE
DIRECTOR
FREDERICK O. A. ALMQUIST, P.E.
SANITARY ENGINEER
H. F. SACHS
BACTERIOLOGIST
J. LAIRD NEWELL, P.E.
CONSULTANT

THE NEWLANDS SANITARY LABORATORY
HENRY SOUTHER LABORATORIES, PROPRIETOR
SANITARY, CHEMICAL AND BACTERIOLOGICAL INVESTIGATIONS
24 TOBEY ROAD
BLOOMFIELD, CONNECTICUT 06002
TEL. (203) 242-6291

WATER SUPPLY AND PURIFICATION
SEWAGE & INDUSTRIAL WASTE DISPOSAL
DESIGN-SUPERVISION-VALUATION
CHEMICAL & BIOLOGICAL LABORATORIES
AIR POLLUTION STUDIES

September 11, 1981

Minges Assoc., Inc.
16 Avon Park North
Avon, Conn. 06001

Attn: Mr. Lawton Averill

Gentlemen:

The attached report covers the analysis of samples submitted to this laboratory on July 23, 1981 - Newlands Sanitary Laboratory Number 710852-710852-A and 710852-B.

Very truly yours,

THE NEWLANDS SANITARY LABORATORY

Thomas D. Lee

TDL:D

Thomas D. Lee
Laboratory Director

RECEIVED
THE MINGES ASSOC. INC.

SEP 14 1981

Sample No.

710852

Mark:

Sample of Wax-Solvent
Mixture

| | | | |
|---------------------------|-----------|----|-----|
| Polychlorinated Biphenyls | less than | 10 | ppb |
|---------------------------|-----------|----|-----|

Pesticides:

| | | | |
|--------------|-----------|----|-----|
| Endrin | less than | 10 | ppb |
| Lindane | less than | 10 | ppb |
| Methoxychlor | less than | 10 | ppb |
| Toxaphene | less than | 10 | ppb |

Herbicides (Chlorophenoxys):

| | | | |
|-----------------|-----------|----|-----|
| 2,4-D | less than | 10 | ppb |
| 2,4,5-TP Silvex | less than | 10 | ppb |

Purgeable Organics:

| | | |
|-----------------------------|---------------|-----|
| 1,1,2,2 Tetrachloroethylene | 57.8 | ppm |
| 1,1,1 Trichloroethane | 16.0 | ppm |
| Aromatics (1R) | None Detected | |
| Water (Fisher Titration) | 96% | |

Note: The above tests were performed on the supernatant portion of the sample. The supernatant represents 25% of the total volume of the sample.

THE NEWLANDS SANITARY LABORATORY
BLOOMFIELD, CT. 06002

Minges Assoc., Inc.

- 2 -

Sept. 11, 1981

Sample No.

710852-A

710852-B

Mark:

Supernatant

Wax

Semiquantitative
Spectrographic Analysis:

Large Amount

Calcium
Magnesium

Iron
--

Moderate Amount

--

Calcium

Small Amount

Nickel

--

--

--

Aluminum
Silica
Magnesium
Nickel

Trace Amount

Iron
Sodium
Silica

Copper
Titanium
Molybdenum

Faint Trace

Silver
Boron
Aluminum
Copper
Chromium
Manganese
Lead
Tin
Zinc

Silver
Boron
Cobalt
Barium
Chromium
Sodium
Lead
Tin
Manganese

THE NEWLANDS SANITARY LABORATORY
BLOOMFIELD, CONN. 06002

Linda

A. RICHARD LOMBARDI, P.E.
PRESIDENT
THOMAS D. LEE
DIRECTOR
FREDERICK O. A. ALMQUIST, P.E.
SANITARY ENGINEER
H. F. SACHS
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WATER SUPPLY AND PURIFICATION
SEWAGE & INDUSTRIAL WASTE DISPOSAL
DESIGN-SUPERVISION-VALUATION
CHEMICAL & BIOLOGICAL LABORATORIES
AIR POLLUTION STUDIES

October 12, 1981

Minges Associates, Inc.
16 Avon Park North
Avon, Connecticut 06001

Attention: Mr. Lawton Averill

Gentlemen:

We have the following to report on the samples submitted to this laboratory on September 11, 1981.

| | | |
|------------|---|----------|
| Sample No. | 710852-A | 710852-B |
| Mark: | Wax - Solvent Mixture Reported 9-11-81 | |

| | <u>Solvent Supernatant</u> | <u>Wax</u> |
|---------------|--------------------------------|------------|
| Nickel (Ni) | 57.7 ppm | 51.0 ppm |
| Iron (Fe) | -- | 654. ppm |
| Aluminum (Al) | -- | 166. ppm |

Very truly yours,

THE NEWLANDS SANITARY LABORATORY

Thomas D. Lee

Thomas D. Lee
Laboratory Director

RECEIVED
THE MINGES ASSOC. INC.

OCT 15 1981

TDL:D